

Cloud Standards

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Christof Marti



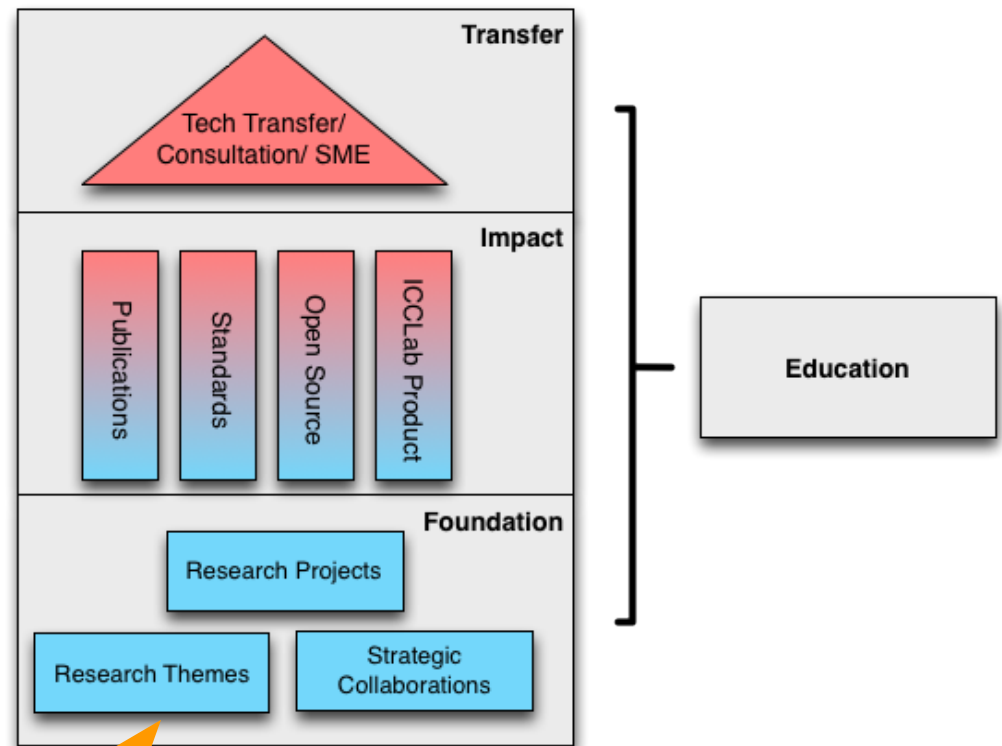
www.cloudcomp.ch, [@ICC_Lab](https://twitter.com/ICC_Lab), [#ICCLab](https://twitter.com/ICCLab)

Intros

Andy Edmonds @dizz



- Senior Researcher@ ICCLab, ZHAW
- IaaS, Interop, Dependability



Lots of Standards



HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



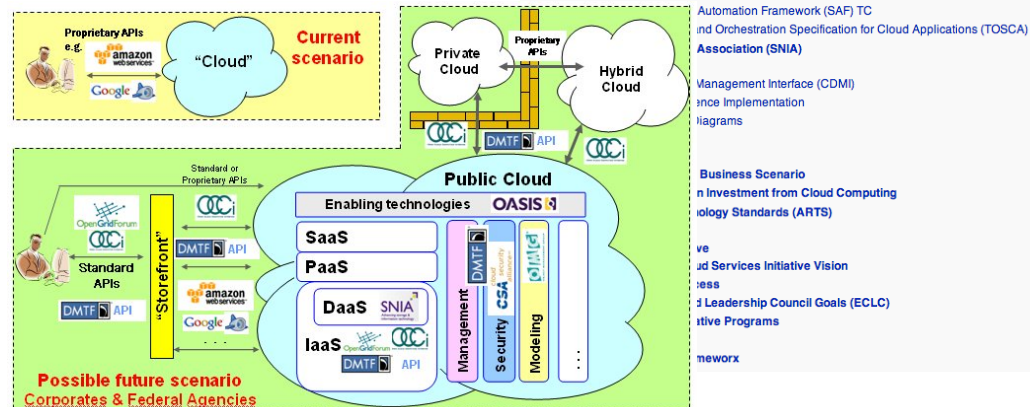


Lots of Cloud Standards

Booz & Co. finds* **160** cloud standards!!!

The EC calls it the "*Standards Jungle*"

- 1 **Distributed Management Task Force (DMTF)**
 - 1.1 Open Virtualization Format (OVF)
 - 1.2 Open Cloud Standards Incubator
 - 1.2.1 Interoperable Clouds White Paper
 - 1.2.2 Architecture for Managing Clouds White Paper
 - 1.2.3 Use Cases and Interactions for Managing Clouds White Paper
 - 1.3 Cloud Management Working Group (CMWG)
 - 1.3.1 Cloud Infrastructure Management Interface (CIMI)
 - 1.3.2 Cloud Infrastructure Management Interface (CIMI) Primer
 - 1.3.3 Cloud Infrastructure Management Interface – CIM (CIMI-CIM)
 - 1.4 Cloud Auditing Data Federation Working Group (CADF)
- 2 **The European Telecommunications Standards Institute (ETSI)**
 - 2.1 TC CLOUD
 - 2.1.1 ETSI Terms and Diagrams
- 3 **National Institute of Standards and Technology (NIST)**
 - 3.1 NIST Working Definition of Cloud Computing
 - 3.2 Standards Acceleration to Jumpstart Adoption of Cloud Computing (SAJACC)
 - 3.2.1 Cloud Computing Use Cases
- 4 **Open Grid Forum (OGF)**
 - 4.1 Open Cloud Computing Interface (OCCI) Working Group
 - 4.1.1 Open Cloud Computing Interface Core Specification
 - 4.1.2 Open Cloud Computing Interface Infrastructure Specification
 - 4.1.3 Open Cloud Computing Interface HTTP Rendering Specification
 - 4.1.4 Other OCCI-related Documents
- 5 **Object Management Group (OMG)**
- 6 **Open Cloud Consortium (OCC)**
- 7 **Organization for the Advancement of Structured Information Standards (OASIS)**
 - 7.1 OASIS Cloud-Specific or Extended Technical Committees
 - 7.1.1 OASIS Identity in the Cloud (IDCloud) TC



* http://www.booz.com/media/uploads/BoozCo_Standardizing-the-Cloud.pdf



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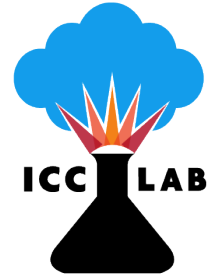
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SO...



What is a **Standard**?

More importantly, what is an
Open Standard?

Open Standards



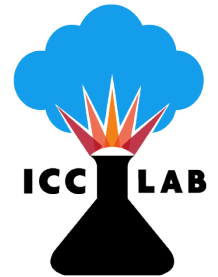
- Ken Krechmer, Colorado University - **KK**
 - Paper: "Open Standards: a Call for Action"

- Open Cloud Initiative - **OCI**



- OpenStand - **OS**





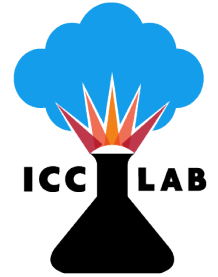
Open Standards

The elements:

O rganisation	+
S pecification	+
I mplementation	+
A doption	==

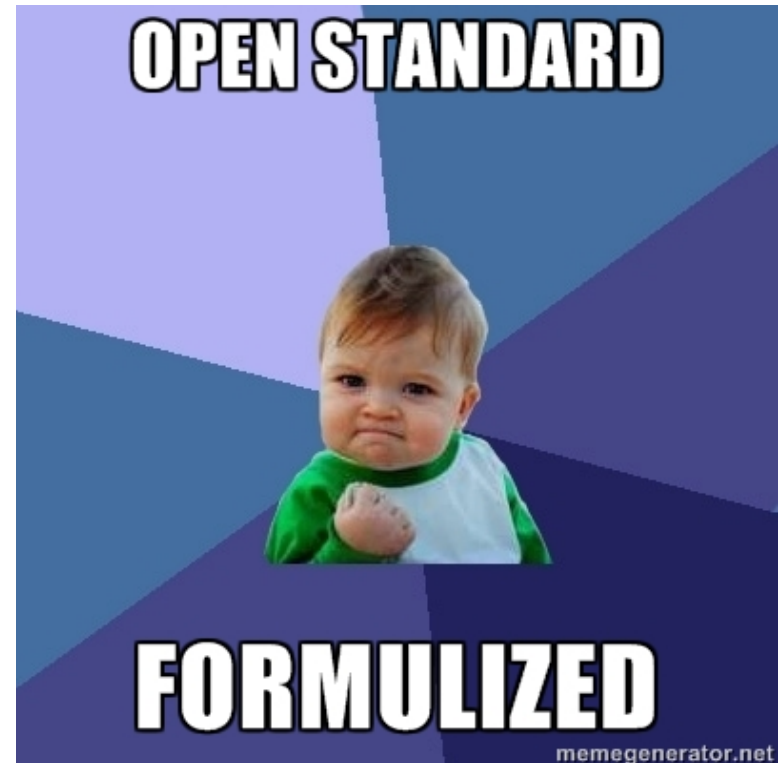
Open Standard

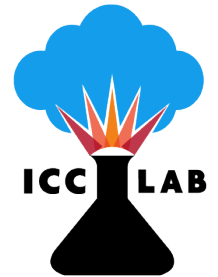
Open Standards



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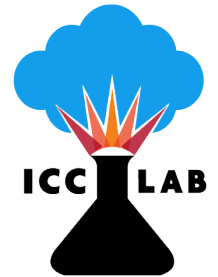
Organisation +
Specification +
Implementation +
Adoption ==





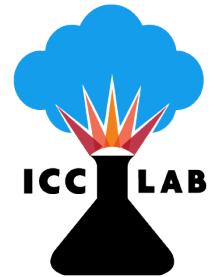
Open Standards

- Open Meetings (**KK**, **OS**)
 - All can join in without barrier, not a "pay-to-play"
- Consensus (**KK**, **OS**)
 - All views considered
- Due Process (**KK**, **OS**)
 - Process in place to oversee document creation/updates, provide time for objections/updates
- Open IPR (**KK**, **OCI**)
 - Copyright, Trademarks, Patents
 - IPR must not be used as an offensive strategy
- One World (**KK**)
 - Not specific to a geographic region



Open Standards

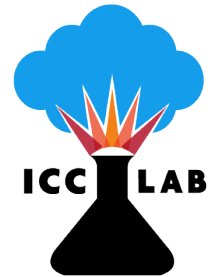
- Open Change (**KK**, **OS**)
 - process, modifications are documented
- Open Documents (**KK**, **OS**)
 - All documents easily and publicly accessible
- Open Interface (**KK**, **OCI**)
 - IPR unencumbered interface, supports backward compatibility, extensible
- Open Access (**KK**, **OCI**)
 - Access to testing suites and associated events
- Ongoing Support (**KK**)
 - Remain open to adjustments from implementers
- Open Formats (**OCI**)
 - Data and meta data must be represented in Open Standards formats



BUT!

- A "standard" in these terms is **only** a *specification*
- To be a "standard" it requires **adoption**
 - The beginning of adoption comes with reference **implementations (OCI)**
 - IETF "**running code**"
- Therefore an open standard requires **implementations**
 - Ideally multiple - one is **not** enough
 - At least one under Open Source License (**OCI**)

The Reality: *De Facto* vs. *De Jure*

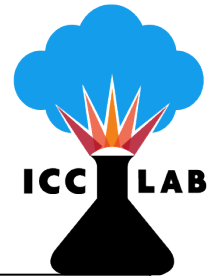


The market dictates the standards

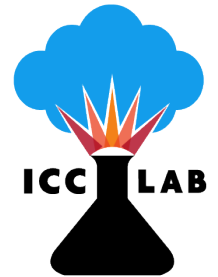
- It selects the API that makes sense collectively
- *de facto!*
- Win for Amazon in the world of IaaS

- *de jure*
 - Specification by committee

Open Standards Scorecard



	EC2	OCCI	CIMI	OpenStack
Open Meeting	No	Yes	No	Yes
Consensus	No	Yes	Yes	Yes
Due Process	No	Yes	Yes	Yes
Open IPR	No	Yes	Yes	Yes
One World	Yes	Yes	Yes	Yes
Open Change	No	Yes	Yes	Yes
Open Documents	Yes	Yes	Yes	Yes
Open Interface	Yes	Yes	Yes	Yes
Open Access	Yes	Yes	Yes	Yes
Ongoing support	Yes	Yes	Yes	Yes
Open Formats	Yes	Yes	Yes	Yes
Implementations	> 2	> 2	2	1



Impasse

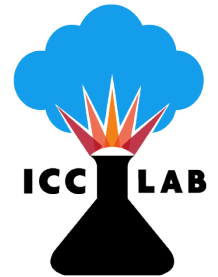
EC2 is *de facto* but **not** an Open Standard

- Must avoid monopolistic power

Solutions:

- Accept EC2?
- Demand EC2 submit to the open standards definition?
- Recommend/require a different API?
- Compromise?

This is a challenge that the ECP aims to tackle via ETSI



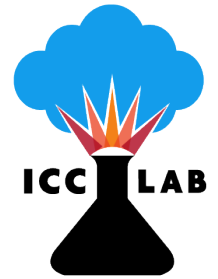
Conclusions

Standards have their place

- Interoperability and independence

Standards are essential but know where they come!

- Standards are not needed for many activities related to:
 - Start-up, "F*ck it, Ship it"
 - Prototyping



Conclusions

Upcoming... federated clouds!

- They will need interoperability standards
- Europe given its geo/political borders could tackle the CC market via federation
 - Great example: EGI FedCloud
- How will you manage and move your cloud workload?

Thank You!

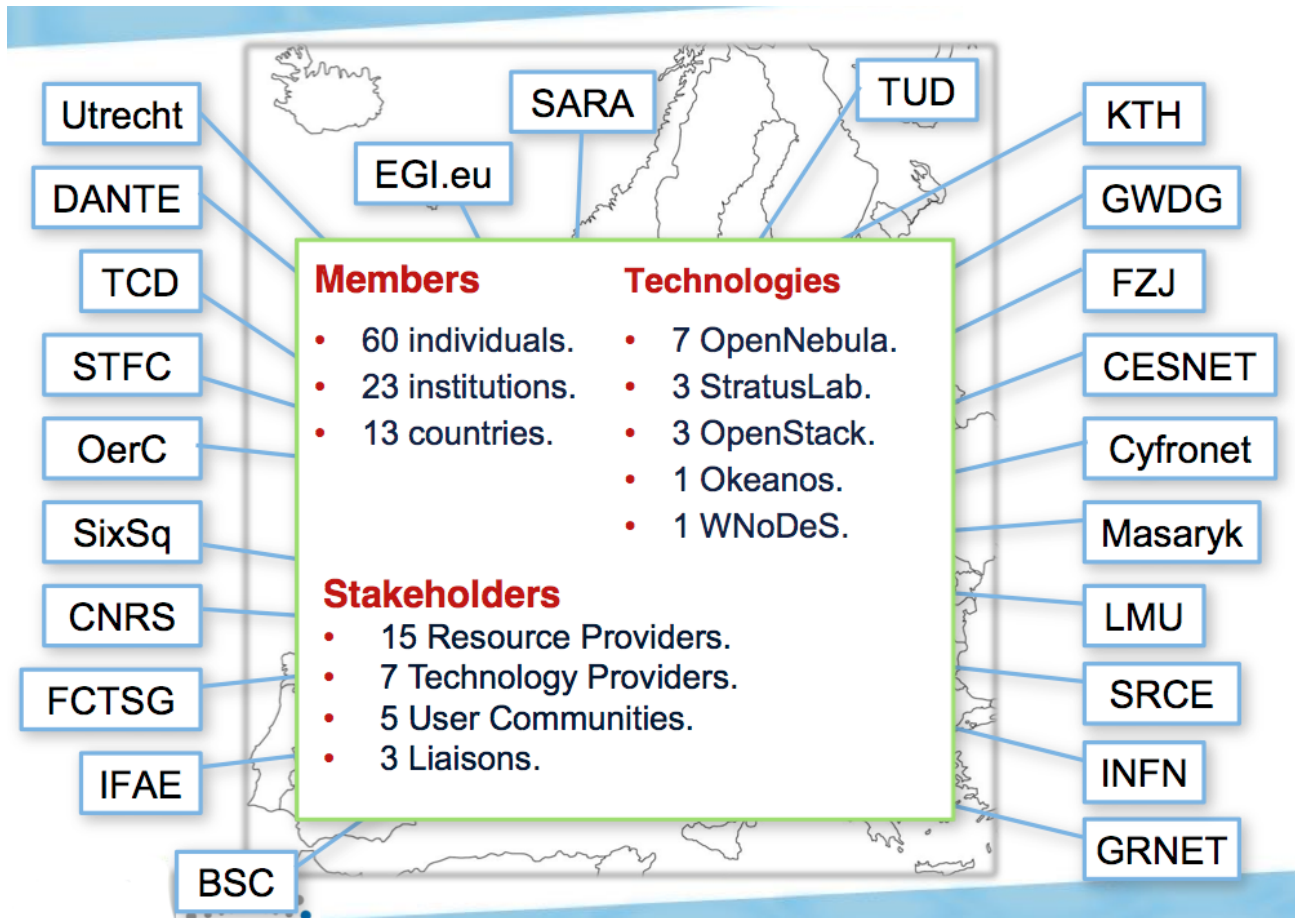
Let's talk!

www.cloudcomp.ch, [@ICC_Lab](https://twitter.com/ICC_Lab), [#ICCLab](https://twitter.com/ICC_Lab)



Backup

EGI FedCloud



Interop Demonstrated!

OCCI Impact



Implementations



Recommendations

